Present Claims

1-33. (Canceled)

34. (New) A digital micro-mirror device projection system for outputting a stereoscopic encoded optical signal comprising

3D data formatter for accepting input stereoscopic image signals having an input frame rate, processing said input signals, and providing an output signal characterized by an a self synchronized output frame rate independent of and decoupled from the input frame rate,

wherein said self synchronized output frame rate is predetermined or set by a user;

a digital micro-mirror device data formatter for receiving an input stereoscopic image and control signal at the output frame rate generated by the 3D data formatter, and for outputting an output stereoscopic image and control signal including

color wheel control signals indicative of rotation rate;

output digital micro-mirror device data indicative of micro-mirror switching rates;

optionally 3D field signal for synchronization with an optional active rotator of a 3D encoder sub-system;

wherein said color wheel control signal, output digital micro-mirror device data and optional 3D field signal are synchronized based on the output frame rate generated by the 3D data formatter;

said digital micro-mirror device data formatter comprising

a dual port memory controller that converts input stereoscopic

image and control signal at the output frame rate from a full color image into an image stream having serial individual color images synchronized to the rotation of the color wheel based on the output frame rate;

a memory device;

a digital micro-mirror device data converter for formatting data into a format readable by a digital micro-mirror chip;

a micro-controller for setting the register values of the dual port memory controller based on the 3D format and sets the optional 3D field signal;

an illumination source including

a lamp for transmitting light to condensing optics, light from said condensing optics being transmitted to a rotating color wheel,

the rotating color wheel coupled to digital micro-mirror device data formatter for receiving color signal data indicative of rotation rate synchronized based on the output frame rate generated by the 3D data formatter;

a digital micro-mirror chip receiving the output digital micro-mirror device data synchronized with the output frame rate generated by the 3D data formatter from the digital micro-mirror device data formatter and reflecting, from micro-mirrors of the digital micro-mirror chip, light received from said color wheel;

a 3D encoder system having a first 3D encoder sub-system integrated with said color wheel, said 3D encoder system synchronized with the output frame rate generated by the 3D data formatter; and

projection optics for projecting light reflected from said digital micro-mirror chip.

35. (New) A stereoscopic projection system comprising the digital micro-mirror device projection system as in claim 34 and an optical decoder for allowing a viewer to perceive stereoscopic images.

36. (New) The stereoscopic projection system as in claim 35, wherein the optical decoder comprises passive polarizing lenses having one polarization state corresponding to one eye and another polarization state corresponding to another eye.

37. (New) The stereoscopic projection system as in claim 35, wherein the optical decoder comprises active shutter glasses.

38. (New) The digital micro-mirror device projection system as in claim 1, wherein said self synchronized output frame rate is set or selected to reduce appearance of flicker.

39. (New) The digital micro-mirror device projection system as in claim 1, wherein the output signal of the 3D data formatter is Color Sequential stereoscopic data.

40. The digital micro-mirror device projection system as in claim 1, wherein the output signal of the 3D data formatter is Frame Sequential stereoscopic data.

41. (New) The digital micro-mirror device projection system as in claim 1, wherein the color wheel and the first 3D encoder sub-system comprises circular polarizing color filters.

42. (New) The digital micro-mirror device projection system as in claim 41, further comprising

a second 3D encoder sub-system including a 1/4 wave plate for switching polarization states positioned between said digital micro-mirror chip and said projection optics or positioned in a light path after said projection optics.

43 (New) The digital micro-mirror device projection system as in claim 1, further comprising a polarizer positioned between the lamp and the condensing optics.

44. (New) The digital micro-mirror device projection system as in claim 43, wherein said polarizer is a linear polarizer, further comprising

a second 3D encoder sub-system including an active rotator for switching polarization states positioned between said digital micro-mirror chip and said projection optics or positioned in a light path after said projection optics, said digital micro-mirror device data formatter further outputting a 3D field signal synchronized with the output frame rate of said 3D data formatter, said active rotator coupled to 3D field signal.

45. (New) The digital micro-mirror device projection system as in claim 43, wherein said polarizer is a circular polarizer, further comprising a second 3D encoder sub-system including an active rotator for switching polarization states positioned between said digital micro-mirror chip and said projection optics and a 1/4 wave plate between said digital micro-mirror chip and said active rotator, or a second 3D encoder sub-system including an active rotator for switching polarization states positioned in a light path after said projection optics and a 1/4 wave plate positioned between said projection optics and said active rotator,

said digital micro-mirror device data formatter further outputting a 3D field signal synchronized with the output frame rate of said 3D data formatter, said active rotator coupled to 3D field signal.

46. (New) A digital micro-mirror device projection system for outputting a stereoscopic encoded optical signal comprising

3D data formatter for accepting input stereoscopic image signals having an input

frame rate, processing said input signals, and providing an output signal characterized by an a self synchronized output frame rate independent of and decoupled from the input frame rate,

wherein said self synchronized output frame rate is predetermined or set by a user;

a digital micro-mirror device data formatter for receiving an input stereoscopic image and control signal at the output frame rate generated by the 3D data formatter, and for outputting an output stereoscopic image and control signal including

color wheel control signals indicative of rotation rate;

output digital micro-mirror device data indicative of micro-mirror switching rates;

optionally 3D field signal for synchronization with an optional active rotator of a 3D encoder sub-system;

wherein said color wheel control signal, output digital micro-mirror device data and optional 3D field signal are synchronized based on the output frame rate generated by the 3D data formatter;

said digital micro-mirror device data formatter comprising

a dual port memory controller that converts input stereoscopic image and control signal at the output frame rate from a full color image into an image stream having serial individual color images synchronized to the rotation of the color wheel based on the output frame rate;

a memory device;

a digital micro-mirror device data converter for formatting data

into a format readable by a digital micro-mirror chip;

a micro-controller for setting the register values of the dual port memory controller based on the 3D format and sets the optional 3D field signal;

an illumination source including;

a lamp for transmitting light to condensing optics, light from said condensing optics being transmitted to a rotating color wheel,

the rotating color wheel coupled to digital micro-mirror device data formatter for receiving color signal data indicative of rotation rate synchronized based on the output frame rate generated by the 3D data formatter;

a digital micro-mirror chip receiving the output digital micro-mirror device data synchronized with the output frame rate generated by the 3D data formatter from the digital micro-mirror device data formatter and reflecting, from micro-mirrors of the digital micro-mirror chip, light received from said color wheel;

a 3D encoder system including a polarizing device and an active rotator, the active rotator coupled to said 3D field signals from said digital micro-mirror data formatter, said 3D field signals being synchronized with the output frame rate generated by the 3D data formatter, said 3D encoder system positioned between digital micro-mirror chip and projector optics or positioned in a light path after said projection optics.

47. (New) The digital micro-mirror device projection system as in claim 45, wherein said polarizing device of said 3D encoder system comprises a linear polarizer.

48. (New) The digital micro-mirror device projection system as in claim 45, wherein said polarizing device of said 3D encoder system comprises a circular polarizer and a 1/4 wave plate.